

THE MOTOR AGE

VOL. I.

CHICAGO, OCTOBER 24, 1899.

NO. 7.

ENTERED AT THE CHICAGO POST OFFICE AS SECOND-CLASS MATTER.

THE MOTOR AGE is published every Tuesday by THE CYCLE AGE COMPANY, at 324 Dearborn St., Chicago. Subscription price in the United States, Canada, and Mexico, \$2.00 per year; foreign countries (in postal union), \$4.00 per year, payable invariably in advance. Advertising rates on application. Copy for changes in advertisements must be in hand the Thursday previous to publication to insure insertion.

LEADING CONTENTS

	PAGE
The Truth Cropping Out.	122
Will Electric Traction Survive? Conversion of a Contemporary.	
Expressions from Owners.	123
Uniform Terms for Motor Parts Lacking.	
The Gas Motor Combination.	123
Cycle Construction in Electric Carriage.	124
Manufacture in Colorado.	124
Motor Equipment for Heavy Wagons.	124
Motor Omnibuses—Serpellet's Construction.	125
From the Export Exposition.	127
About Imported Enthusiasm.	129
Judged by Foreign Visitor.	130
The Liquid Air Automobile.	132
Electric Company Changes President.	133
Automobile Club's First Meeting.	135
Doctor's Closed Gasolene Carriage.	137
Physician's Testimony to Practicability of Motor Vehicles.	
Four Steam 'Bus Systems.	138
Our Public Educators.	139
Accidents in Paris.	140
Motors Considered Sacrilegious.	140
The Deceptive Speed of Autos.	140

THE TRUTH IS CROPPING OUT

WILL ELECTRIC TRACTION SURVIVE? A CONVERTED CONTEMPORARY ADOPTS THE MOTOR AGE VIEW ACCORDING TO WHICH THERE IS NO REASON, IN THE MECHANICAL NATURE OF STORAGE BATTERIES AND RUBBER TIRES, TO SUPPOSE THAT ELECTRIC VEHICLES EXCEEDING A CERTAIN WEIGHT LIMIT WILL EVER BE FIT TO TRAVEL OVER COMMON ROADS.

From its beginning on May 4 as a motor vehicle department in *The Cycle Age* and later in its separate existence *The Motor Age* has endeavored to place the relative merits of storage battery vehicles and other types of motor vehicles clearly before the public. It was at no time confounded in its judgment in regard to ultimate results by the great financial display made by the electric syndicates and their subcompanies, but pronounced it plainly as a deception and a crime against the American public to allow the impression to spread that electric vehicles were fit for any but the most severely limited purposes. In this standpoint it stood alone, as it stands alone to-day in emphasizing several other points with which its readers are now familiar.

One More Missionary.

Its senior among the motor vehicle journals, *The Horseless Age*, for a long time followed the easy method of permitting its readers to be carried away with the current of electric stock jobbing that wore the face of legitimate manufacturing enterprise, and did not lift its voice to point out the incongruous falsehoods that were being foisted upon the public with regard to electric traction, liquid air, etc., until *The Motor Age* had shown the way. Now its conversion may be announced so far as storage battery traction for ordinary motor vehicle purposes is concerned. For the past month, or so, it has contributed several valuable articles, advancing exactly the same views that *The Motor Age* first advocated and is showing signs of coming around to wholesome opinions also on the tire question, the requirements in motors, etc., and altogether bids fair to become a truly valuable medium for motor vehicle intelligence. *The Motor Age* is proud of having produced this salutary effect and reprints with pleasure the following article

from its converted contemporary of October 18:

Storage Battery Financiering.

A feature of the past week has been the evident signs of demoralization in the stocks of the electric vehicle and transportation companies, and a change in the executive of the Electric Vehicle Co.

The gentlemen who retired were able financiers, as proved by their annual statement published several weeks ago. The gentlemen who now assume control of the company's affairs are also able financiers, backed by millions of money, but their millions cannot change one atom of the storage battery or make it anything but what it is—a heavy, inefficient, delicate and destructible apparatus wholly unfit for general locomotion, the "unmitigated nuisance" that Prof. Elihu Thompson has properly termed it. Nor will they be able to change the nature of the rubber tire and render it more suitable for sustaining heavy weights and resisting the wear and tear of rough roads. No, in the engineering department their financial ability can be of no avail, for the limit has been reached. Rubber is rubber and lead is lead. Will it be largely occupied, then, in preparing annual statements and figuring out enormous profits on the operation of storage battery cabs, when it is common report that a storage battery lasts only a few months in such service and the rubber tires alone cost the company almost as much as it receives?

The editor of *The Horseless Age* is not acquainted with the gentlemen who are mentioned as the backers of this unfortunate enterprise, but from what he hears from those who do know them and from what he wishes to believe of them, he is forced to the conclusion that they have been deceived by the storage battery clique of Philadelphia. Fresh from successes in the trolley field, where electricity gives splendid service with a steam engine behind it, they have carelessly assumed that this motive power was destined to prove as practical in road as in track locomotion. In other words, they know nothing of the storage battery, which constitutes the main difference between electric track and electric road locomotion. Let them consult competent and disinterested engineers, and learn the difference between generating electricity direct from a steam engine and boxing it up in a ton of lead and trundling it over cobble stones and car tracks. Then let them ascertain the actual cost of operating storage battery cabs and their worst

fears will be realized. The outlook for the lead cab is utterly hopeless.

For legitimate capital, sound engineering and good commercial ability, the motor vehicle industry offers excellent inducements. It has no gold pockets—except for promoters.

A Little Pardonable Egotism.

If all motor vehicle journals would de-

cide to take their cue from The Motor Age as resolutely as The Horseless Age has done, the prospects for a healthy development of the motor vehicle industry and for general satisfaction among the public with the vehicles that they may eventually decide to purchase, would be enormously enhanced.

EXPRESSIONS FROM OWNERS

UNIFORM TERMS FOR MOTOR VEHICLE PARTS TO BE POPULARIZED.—WHAT MANUFACTURERS MAY DO TO ENCOURAGE CUSTOMERS TO WRITE OF THEIR EXPERIENCES.

Editor The Motor Age.—In reply to your favor of October 19, I am not connected in any way with the motor vehicle business, but like many others have the fever; have owned and operated a "Winton" for the past ten months, covering over 1,100 miles of good and bad roads, and could hardly be induced to own a horse again.

I am much pleased with Motor Age, and wish you success. Yours truly,

Forestville, Conn., Oct. 21. F. N. MANROSS.
who, while not connected with the industry financially, have had practical and prolonged experience with motor vehicles, form a very interesting department in foreign automobile journals, but are as yet difficult to obtain in this country. There is no doubt, however, of their value, especially if the writers will relate their experience in detail, and communications of this character will be gratefully received by The Motor Age.

It would probably be of great assistance to swell the volume of this class of writings if manufacturers would accompany every vehicle sold by them with a list of the names that should be used for designating the various parts of the mechanism, as many owners of motor vehicles are disinclined to write when not sure of using the correct terms for what they want to express. In order to contribute to bring about uniformity in the terms used The Motor Age will print among its reading matter any list of terms, accompanied with illustrations of the parts to which they apply, that established manufacturers may send.

There may be a great deal more "free advertising" of a desirable nature in adopting this plan than is apparent at first glance.

THE GAS MOTOR COMBINATION

No news has yet been obtained in regard to the floating of the stock of the Continental Automobile Company, of which prominent mention was made in last week's issue, and in which were to be amalgamated the Winton Motor Carriage Company, the National Motor Carriage Company and the Manhattan Oil Motor Company. At one time last week it was announced that 3,060 shares of a total of 3,500 of preferred stock had been subscribed, but later it was understood

that the Continental Trust Company which was mentioned as depository for the subscriptions had refused to loan its name, being of the opinion that the value placed on the patents was excessive.

As stated in last week's issue the question of patent values is the shoal upon which previous attempts at consolidation of gasoline motor vehicle makers have been wrecked and it now seems likely that this question has again lifted its head at an inopportune moment.

From the public's standpoint it would be desirable if some combination of gasoline motor vehicle manufacturers could be perfected so as to procure working

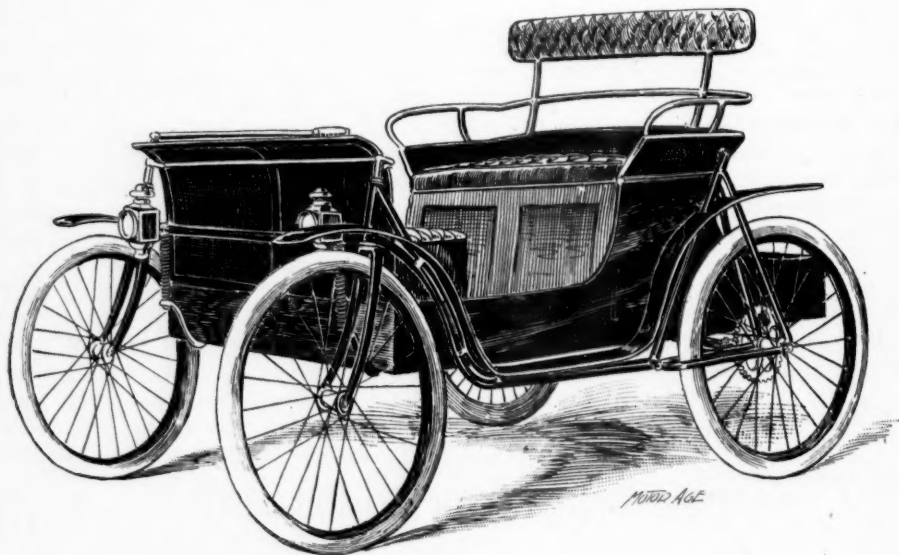
capital for this most important branch of the industry in which the greatest hopes for vehicles of a popular type are centered.

CYCLE CONSTRUCTION IN ELECTRIC CARRIAGE

The frontispiece drawing in this issue, which is also shown herewith, represents the Chapman electric carriage made by the Belknap Motor Company of Portland, Me., a brief description of which was given some time ago.

This carriage is remarkable for being probably the lightest electric four-wheeler in this or any other country, weighing 360 lbs., of which one-half is represented

mileage will average about 20 miles. It will be understood that weight is economized to the utmost in order to produce this light electric carriage with its elastic radius of travel and it represents probably the most intelligent application of the electric principle to motor vehicles which has yet been tried, but it seems evident that its usefulness must be limit-



BELKNAP COMPANY'S LIGHT ELECTROMOBILE.

by the battery usually carried. It is intended for one person or, if the road is smooth so as to avoid jolts, for two. In case only one person occupies it, it is reckoned that the vehicle will support an extra battery on smooth roads, and in that case the mileage that it may travel on one charge may reach 40 miles or more. With one battery and one person the

ed to very fine roads. It is perhaps best adapted for such work as carrying one person from his home to his place of business, shopping and similar light work.

The frame rests on four 32-inch tandem bicycle wheels, with 4-inch tires. Two $\frac{1}{2}$ H. P. motors are used, each geared to the rear wheels by a 10-inch gear and run independently of each other.

MOTOR OMNIBUSES—SERPOLLET'S CONSTRUCTION

THE UNSATISFIED LONGING FOR LARGE MOTOR VEHICLES TO PLY FOR HIRE WHERE RAIL TRANSPORTATION IS LACKING—INHERENT DIFFICULTIES IN COMBINING LARGE SIZE AND WEIGHT WITH GOOD SPEED OVER INDIFFERENT ROADS.

Although motor omnibuses present some of the knottiest problems that must be solved before such vehicles may be made mechanically and financially successful, projects for motor omnibus lines are more numerous than almost any other projects for the application of the motor principle to transportation over common roads. Omnibuses being designed to carry a large pay-load must necessarily be heavy. The load further increases the weight to be transported. They therefore depend on smooth and hard roads much more than other kinds of motor vehicles. They damage roads more than other motor vehicles, or, if pneumatic tires are employed, they damage the tires. Unlike motor freight wagons, which are also necessarily heavy, they must be propelled at good speed whereby the difficulties are doubled or quadrupled, as the case may be.

Projects Fathered by Wishes.

Nevertheless, the projects for omnibus lines multiply from day to day and, strange to say, most of the projectors favor the electric mode of traction by storage battery, although the objections to this source of power are more fundamental than the objections to any other source of power, unless the travel is limited to short distances from one battery-exchange station to another and the road throughout is hard, smooth and level.

No Conclusive Successes Anywhere.

The attempts that have been made in France and England to introduce motor omnibus service have all been limited to the best of roads and have nearly all been based on steam traction, yet from none of them are reports forthcoming showing them to be permanently successful, and, what is more important, the shortcomings that have cropped out are chiefly such as are caused by excessive weights and which would be aggravated if electric

traction by storage battery were substituted.

The public interest in omnibus lines remains, however, to all appearances, unabated, and this is probably best explained by the financial aspect of the matter. A successful motor omnibus line would be a profit-producing institution, while the purchase of motor carriages promises nothing but a luxury with a series of expenditures attached.

Where There's a Will—

The Motor Age has been requested to give information in regard to motor omnibuses, but regrets that reliable data of really successful omnibus construction are not as yet obtainable. The editor is firmly convinced that serviceable omnibuses for American streets and roads will not be produced until the ordinary four-wheel design of this class of vehicles shall have been thoroughly remodeled and the weight and traction effort distributed over a much larger road surface than with the present types.

Probably the most acceptable omnibuses so far made have been those driven by steam, but the improvements in gasoline motors, which are now being announced—more or less creditably—from all directions at home and abroad, bid fair to bring the more compact hydro-carbon motor into favor in the future for this as for other motor vehicle purposes.

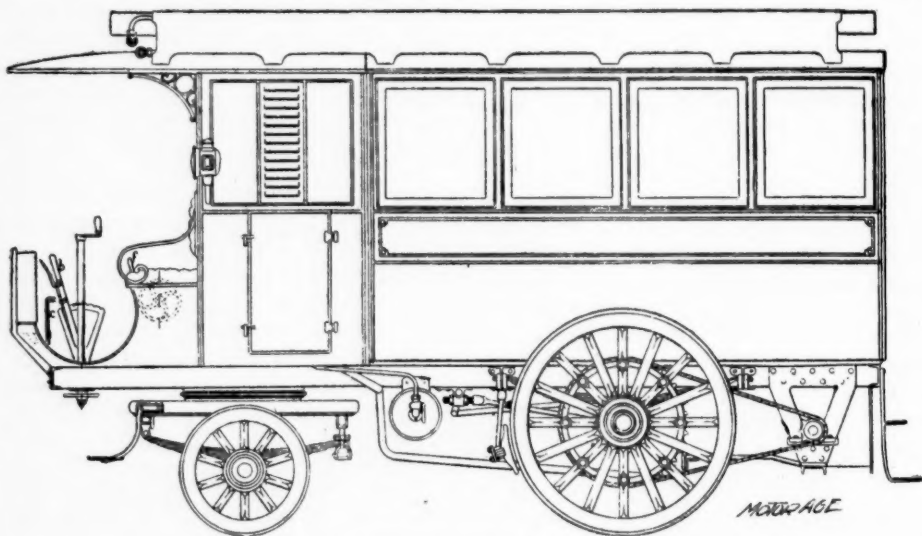
The Flash Boiler System.

Among the steam omnibuses the Serpollet vehicle in which the flash-boiler system is employed, is noted for reliable service. It is built in several styles, of which one is herewith illustrated. This is built to accommodate 14 passengers, 12 in the coupe and 2 upon the front platform, and to carry 1,100 lbs. of baggage upon the roof, the useful load being about 3,080 lbs. The generator is of the well known Serpollet type, and is placed in a

compartment just behind the front platform. The heating surface is 7.05 square metres (75.86 square feet), and the total weight is 2,750 lbs.

The generator is fired by liquid fuel—kerosene—carried in a tank, situated below the floor of the vehicle. The capacity of the tank is 330 lbs., or about 41 gallons. By means of a hand pump the oil is subjected to a slight air pressure which forces it to the burners. The air pressure is regulated by a special pump worked when the motor is running, so that the

The combustion of 1 lb. of kerosene produces 13.7 lbs. of steam at this temperature, and a pressure of 1 atmosphere in the kerosene tank forces from 26 to 30 pints of kerosene to the burners per hour, the combustion of which produces about 440 lbs. of steam per hour. The consumption of steam at the temperature and pressure stated, and with a cut-off of about 35 per cent., is about 26 lbs. per H. P., the total power of the motor being 17 H. P., or 12.75 kilowatts. This power can, however, be doubled on occasion;



A SERPOLLET STEAM OMNIBUS.

amount of kerosene delivered is proportioned to the steam to be generated.

Slow to Start.

The method of working the generator is as follows:

The burners heat the generator to a temperature of between 660 degrees Fahrenheit and 750 degrees F.; this occupies about 45 minutes. A small quantity of water, about 1 1-2 pints, is injected by a hand pump and is immediately "flashed" into steam. The further supply of feed water is pumped into the generator by another small feed pump. The supply of kerosene to the burners and of feed water to the generator is so regulated as to maintain the steam at a pressure of 213 lbs. per square inch, and a temperature of about 660 degrees F., having about 300 degrees F. of superheat.

thus, at a trial in 1898, while ascending a gradient of 7.7 per cent for a length of 981 yards at a speed of between 6.8 and 7.4 miles per hour, the motor developed as much as 31 H. P. at the driving wheels.

The Serpollet Motor.

The usual Serpollet motor consists of four cylinders, disposed horizontally in opposite pairs. The inner extremities of these cylinders are connected to an aluminum crank chamber. The four piston rods are coupled directly to a two-throw crank shaft, having the cranks 90 degrees apart; each crank is thus connected to a pair of opposite piston rods. The steam distribution is effected by cams on a second motion shaft driving by equal-sized pinions from the main shaft. Upon the second motion shaft are four cams

which operate sliding stems. These are fitted with rollers abutting upon the cam projection, and are kept in contact with them by springs, which are secured to crossheads on the valve stems. These cams have a varying development, and, moreover, can slide longitudinally upon the second motion shaft, by altering their position and by means of a screw adjustment on the valve stems, the period of admission can be regulated from nothing to as much as 80 percent of the stroke.

In its application to a motor carriage, as well as to a boat, this motor possesses the power of running at a very great speed, and of having all its organs in movement enclosed in an absolutely airtight box. The consumption of steam is very much reduced.

Fuel and Water Feed.

The generator is rectangular in form, having double sides packed with insulating material. The generator consists of three parts; a coil of piping in the lower part of the casing and which acts as a preliminary heater; a system of four rows of twisted tubes arranged in series, and which acts as a vaporizer; and a super-heating coil placed above in the upper part of the chamber. The joints of these tubes are protected from the heat of the furnace by means of baffle plates. The principles aimed at in designing this boiler were to regulate the supply of petroleum in accordance with that necessary for the complete vaporisation of all the water in the generator; to make the consumption of petroleum and water vary with the energy developed by the motor,

and to make the production of energy a matter of automatic regulation. These objects are sought to be effected by means of two plunger pumps of unequal diameter and variable stroke, the one supplying oil and the other feeding the generator with water; these pumps are worked by a lever and eccentric, and the strokes and displacements are so arranged that the ratio between the quantity of petroleum and the quantity of water pumped can either be a fixed one or varied at will.

Speed Gear for Omnibuses.

The motor used in the omnibus illustrated varies slightly from the type here described. It has only two cylinders of 4.724 inches diameter and 3.937 inches stroke. They work at simple expansion and drive two cranks 90 degrees apart. Upon the main shaft are two pinions either of which can gear with the pinions on the differential gear. The motor of the differential shaft is transmitted by chain and gearing to the driving wheels at a reduction of 5 to 1. The motor speed varies from 415 to 625 revolutions per minute, and the velocity ratio between the main shaft and the driving wheels is either 6.2 or 9.4 according to the gear in use.

Water Supply May be Small.

On the roof of the vehicle is a condenser cooled by the air, but provision is made to carry an ample supply of water, in case the latter does not operate well. The condenser, however, in general permits a much less quantity of water to be carried. Several brakes are employed.

FROM THE EXPORT EXPOSITION

Philadelphia, Oct. 20.—While the National Export Exposition in its entirety reflects the greatest of credit upon its promoters, the portion of the exhibition devoted to automobiles and accessories has at present by no means a representative appearance. In fact, the space set apart for the automobile show is the only section which is not absolutely full to

overflowing. This is explained in part by the management as being due to the inability of exhibitors to secure even a sample of the machines they represent. At present there are but seven spaces devoted to automobiles, motor vehicle tires, etc. The exposition managers assert, however, that within a week or two every foot of space originally set apart for the

purpose will have been occupied, and will remain so until Nov. 30, the date announced for the closing.

The Commercial Congress, which opened last Thursday, has brought to Philadelphia hundreds of trade representatives from foreign lands, and the exhibitors in both the automobile and bicycle sections (the latter in the East Arcade of the Main Building) report numerous inquiries from these delegates, and that the prospects of resultant business from the countries they severally represent are decidedly encouraging.

Among the concerns represented in the automobile section are the following:

The Locomobile Company of America, with two motor carriages and a "pony" trap. The "three-miles-for-a-cent" machines are the hit of the section, and the daily trials of these machines are witnessed by hundreds, many of whom are permitted to take short rides in them over the course provided therefor by the exposition management.

The exhibit of the Waverly electric automobile is in charge of Roach & Barnes, of this city. Mr. Roach reports several sales up to date, and says that the exhibition machine could have been sold several times over for spot cash.

The Hertel hydro-carbon motor carriage is exhibited by the Oakman Motor Vehicle Company of Greenfield, Mass. The daily exhibitions of this 500-pound machine demonstrate its dirigibility and minimum running cost.

The United States Ball-Bearing Company, of Washington, D. C., exhibits a line of automobile anti-friction axles, some of them capable of carrying upwards of 11,000 lbs. for months without showing the least signs of wear.

The Rubber Tire Wheel Company, of Philadelphia, shows a complete line of its tires, ranging from $\frac{3}{4}$ to $3\frac{1}{2}$ inches, a special automobile solid rubber tire being a feature.

The International Automobile & Vehicle Tire Co. is exhibiting its Apex "Autodo," for motor carriages, and the Tough Tread "Autodo" for medium-weight vehicles.

The largest occupied space in the section is that of the General Electric Auto-

mobile Company, among the vehicles exhibited being electric coupes, traps and a truck for heavy hauling.



DAIMLER GASOLENE FREIGHT WAGON

Marshall Halstead, consul at Birmingham, England, sends to the State Department an interesting and valuable statement by E. H. Bayley, regarding the question of cost of operating heavy motor vehicles, which, he says, are to replace horse-drawn wagons in the near future. Mr. Bayley, the consul says, is entitled to speak with some amount of authority, as he was chairman of the London Road Car Company, and now, in addition to employing 1,000 or so horses in his own business, is chairman of the Daimler Motor Company, and takes a keen interest in all that tends to lessen the cost of heavy traffic.

"Of course," he said, "no matter how excellent motor driven vehicles may be, no one would look at them seriously if their use were more expensive than that of horses. That is exactly where the ultimate success of motor vehicles lies, for the tests by the Automobile Club at Richmond and more recently those held by the Liverpool Self-Propelled Traffic Association have shown that not only can motors do general carrying work more quickly and more efficiently than horses, but—most telling point of all—do it at less than one-seventh of the cost.

"For instance we have a car which has been proved, under the tests already mentioned, to be capable of carrying a load of three tons twelve hundred miles at a cost for fuel which works out a half penny per ton per mile. The total upkeep of such a vehicle when all expenses for working, wages, fuel repairs, insurance, etc., are taken into consideration comes to a sum of \$1,980.73 and this, with a carrying capacity for 260 working days, gives an average cost of a fraction under 3 half pence (3 cents), per net ton per mile. When that is compared with the cost of horses—my experience teaches me that it varies from 18 cents to 24 cents per ton per mile—it can be seen what a future these vehicles have."

ABOUT IMPORTED ENTHUSIASM

PARISIAN NEWSPAPERS ABOUND WITH PRAISE OF AMERICAN LIGHT STEAM VEHICLES.—PURCHASERS IN PLENTY.—SOME PECULIARITIES OF FRENCH METROPOLITAN PRESS NOTICES AND THEIR RESURRECTION IN HOME PUBLICATIONS.

While the American public are already asking for radical improvements in steam as well as gasoline motor vehicles and will probably not be content until a vehicle has been evolved that combines the advantages of both and in addition offers space for baggage, the Parisian press has gone into ecstasies over the Stanley steam vehicle and doubtless reflects to some extent what the Parisian automobilists are thinking on the subject.

A Revelation to the French.

Le Velo, though the champion of champions for French supremacy, recently permitted a highly laudatory signed article in regard to the production of the Stanley brothers to find space in a corner of its first inside page.

Le Figaro had the following:

This is indeed the perfection of the automobile, this exquisite, light, elegant and noiseless horseless carriage from which I descend in wonder to write this article. The enthusiasts will hear this with delight and those who have delayed to purchase such a carriage until it should be perfected will be glad to know that now this has been accomplished; for this carriage, about which they have dreamed, exists today. It is called the "Stanley."

Let us compare yesterday with today. Yesterday it was an enormous vehicle, dangerous, noisy and nauseous. It left behind it an odor of oil. The carriage made such an incessant noise that conversation was impossible. You were in imminent danger of being thrown into a ditch, the heavy machine being so difficult to guide. The mechanism was complicated. There were valves to open and close, numerous brakes to maneuver changes of speed which required some one's incessant attention. There was the prospect of suddenly stopping on the road and a crowd gathering about you, the fear of ridicule (which so chagrins a Frenchman) at not being able to start up again. Yesterday everybody expected to wait six or eight months before anything better could be expected and then it was believed that it would cost 20,000 or 30,000 francs.

Today we have the Stanley, a light and graceful phaeton, without apparently other mechanism than a chain for the transmis-

sion of power, not exacting any special knowledge to run it, without any complicated machinery, noiseless, odorless, safe.

A reservoir to fill with water, a burner to light, four minutes to wait for pressure and off you go.

The mechanism is so simple that a child can understand it, and it will delight the people who have found running horseless carriages a difficult thing to do. With a little lever in the right hand, one can guide the carriage everywhere as a cavalier guides a spirited horse with a slight pressure on the rein.

In short, one can feel perfectly at home with a Stanley a few days after running it, and it only costs 5,000 francs.

It is needless to add that the Stanley is an American invention. Everybody knows that the Americans are inimitable inventors and the automobile which comes to Paris from there today is simply a wonder.

Le Temps writes a little more soberly:

Everybody is talking about the new carriage which will make a revolution in horseless carriages. The carriage, which is an American invention, possesses, it appears, all the advantages of speed of those carriages now in use, and is, besides, exempt from the many and serious inconveniences of our machines. Extreme simplicity in mechanism and in the method of controlling it, a total suppression of noise and smell, and a lightness without precedent, are its chief characteristics. The motive power being steam, there is no special speed gearing.

The carriages may be used for all purposes, can go down hill as well as climb, and are guided simply with a lever in the right hand. The price is only 5,000 francs and the carriages are delivered in a few days after they are ordered.

Real Significance Sufficient.

The makers of the Stanley are to be congratulated on their success in obtaining \$1,000 in Paris for the same vehicle which is sold here for \$600. It is after all a telling testimony to the intrinsic merit of the light steam vehicle that it can be sold in the center of automobile manufacture with the embargo of import duty and agency expenses added to its American selling price.

As to the importance of the Parisian

press eulogies it is to be regretted that acquaintance with journalistic methods in the French metropolis compels the observation that press notices of this kind are broadly for sale. It is customary to hire certain writers who make a specialty of this kind of work to furnish signed articles in praise of commercial products and to insert these articles in such manner that only the initiated can distinguish them from legitimate news matter. In Paris "everybody who is somebody" knows the signatures of these clever writers of disguised advertisements—who rarely permit themselves direct misstatements but are content to deceive "by indirection," as the late James G. Blaine would say—and take the articles for what they are; and it may be said that they are frequently very readable and instructive. But after all they are paid for, and while they do no harm in Paris they are often reprinted in good faith elsewhere and accepted as sincere expressions of opinion.

A Leaf from Hooley's Tactics.

It was one of the secrets of Hooley's financial operations that he purchased

space at a very high price in a few periodicals that were rated as above venality and then reckoned on forcing the opinions of investors through the flood of reprints and rewritings that subsequently appeared in other publications whose owners did not receive a penny in compensation but unwittingly gave bona fide publicity to misleading statements which originated in Mr. Hooley's office.

Home Tests Preferable.

Against similar tactics for utilizing exported and re-imported advertisements to influence the opinions of the American public in regard to American-made motor vehicles, there may well be set a firm determination to form opinions of American motor vehicles solely from tests of the same conducted in this country in a spirit of impartial investigation and with a view to ascertaining not how well each vehicle compares with foreign vehicles but how well it is adapted to perform the work for which it is intended under the conditions here prevailing, the conditions of average streets and roads being included in the consideration.

JUDGED BY FOREIGN VISITOR

COMPLIMENTARY COMPARISON OF AMERICAN INDUSTRY WITH ENGLISH CONDITIONS.—ENCOURAGEMENT TO PROCEED ON ORIGINALLY AMERICAN LINES OF DESIGN.

While it is sometimes necessary to dwell upon the distance which yet separates the motor vehicles built in United States from the comparative perfection and suitability for our conditions which they will eventually reach, there is much comfort in noting that foreign observers are willing to credit the American industry with many good features in comparison with European manufacture. In this respect the impressions of Henry Sturme, the editor of *The Autocar*, from his recent explorations in this country are of interest, although they are not absolutely correct in every detail but to some extent seem to reflect the author's amiable disposition to accept things at their

surface valuation. Says Mr. Sturme on the situation in general:

Production Still Behind.

I was agreeably surprised at the progress which has been made, although, again speaking broadly, and referring particularly to actual manufacturing output, America is, as I had expected to find it, as yet behind this country. Such is, however, the enterprise and "go-ahead-ness" of the American people that there can be little doubt, judging from present indications, that in a year or two's time they will be at a level with us, and in some respects probably ahead.

Independence of European Notions.

There was throughout an agreeable freshness and originality of design about the motors, with scarcely an exception those firms

who are in the industry having started out independently of any European notions, and, instead of copying French patterns as the English makers have almost universally done, they have developed not only their motors but their cars "upon their own," and in so doing they have followed, especially in light petroleum and steam vehicles, very largely the design of the American carriage builder, with a result which is to my fancy distinctly good, for the light business buggy, or "run-about," as it is termed there, when transformed into an automobile makes one of the neatest, handiest, and most presentable vehicles which have yet been produced, although, for the most part, the seats, having been taken bodily from the horse-drawn vehicle, are too narrow to allow sufficient elbow room to the steersman, and that amount of full comfort which automobilists desire. This is, however, a matter of small moment which is easily overcome. With a single exception, too, all manufacturers in the States, whether of petroleum, steam, or electric vehicles, use the hinged steering lever, which can thus be brought into a vertical position to allow of easy access to the vehicle.

In explosion engines American manufacturers, finding stove gasoline—which, I believe, largely corresponds to our benzine—a readily procurable commercial commodity in the States, have adapted their motors to its use, so that the difficulties which attend the European autocarist in the procuring of petrol, benzine, and other highly-distilled products are absent. So much the better for the American user.

Gasolene Vehicles Equal to Foreign.

Whilst I am open to confess that I had expected to find more evidences, both of vibration, noise, and smell, in the petroleum vehicles of America than are to be found here to-day, my observations have shown me that in these several respects American manufacturers are in no wise behind their European competitors—indeed, as compared with some of them, they show superiority, and I only came across one machine which could be termed crude and impracticable.

Advanced in Steam and Electricity.

Needless to say, the light steam carriage—peculiarly an American production—greatly interested me, and in this type of vehicle America is distinctly ahead, although as yet she lacks road experience, and will doubtless learn a great deal in the next few months, as the commercial product finds its way into the hands of the people.

In electrical autocars, too, America is distinctly ahead again, and the use of the electric carriage for public services is being systematically developed to an enormous extent, which is already having its effect most strikingly upon the manufacture.

So far as capital is concerned, that scepticism which exists on this side is wholly absent, and the right sort of people have got their money in it, and money, too, to an

extent which may almost be termed ad libitum.

Of course, it was scarcely to be expected that with capital solidly flowing into the business some schemes of the "wild cat" order would not be in evidence, and the compressed air movement, of which we heard so much a few months back, seems to have been one of these. Something similar, though on a smaller scale, is at present going on in the direction of liquid air as a motive power, and one or two electrical companies have been registered with enormous capitalization, the object of which being, so far as I can gather, to attract purchasers of the stock by selling it at a discount. Still, this sort of thing is having no real effect on the industry, and, as I said before, with such men as Messrs. Whitney, Maloney, Westinghouse, Pope, Walker, (of the Cosmopolitan), Alonzo Barber (of asphalt fame), Clarke (of Pittsburgh), and other well known capitalists solidly interested, the movement is in good hands, and bound to go ahead.

Confidence in the automobile as a practical vehicle is rapidly growing throughout the States, and all the firms who are in the business are to-day in possession of orders considerably in advance of their rate of supply.

Large Output Next Year.

This is a condition of affairs decidedly satisfactory and encouraging, and evidences of American enterprise are shown in the enormous preparations which are being made to meet the coming trade. Factories far too large for immediate requirements are being occupied, and others are already building immense extensions to existing works, and preparations for systematic production are being organized upon a scale unapproachable in Europe. Of course, all these things take time, but in twelve or fifteen months, when the organizations which are now in hand are completed, there is little doubt but that America's production of autocars will more than equal that of this country, and equal, if it does not exceed, that of France, that is, of course, unless we make much more rapid progress on this side than we have been doing in the past. Even, however, with all the preparations for manufacture which are being made, American manufacturers will hardly equal what they speak of doing, and for their own sakes, as well as ours, I hope they will not, for when we hear of preparations for estimated productions of twenty-five large cars per week, and in another place of thirty smaller cars per day, those of us who have 'been through the mill' can only conclude they have, as they say over there, "bitten off more than they can chew," and if they have not they will come very near over-production unless the demand increases at a very much more rapid rate than even the satisfactory progress now being made.

THE LIQUID AIR AUTOMOBILE

TRIPLER PROMISES ONE WITHIN TWO MONTHS BUT HAS NOT YET DESIGNED HIS MOTOR.—SCIENTIFIC AMERICAN SECONDS THE MOTOR AGE.—TRIPLER'S IDEAS UPON AIR NAVIGATION AND MOTOR VEHICLES.

Charles E. Tripler, who invented a process for producing liquid air in quantity after Dr. Linde of Munich had first shown the way, has been lecturing in Cleveland on his invention and the properties of the liquor. He is hopeful of success in applying it to power purposes, for he says:

"In six weeks or two months I will have in operation an automobile propelled by liquid air. It is a question of getting a sufficient surface for raising the temperature of the liquid air so that it will evaporate fast enough to drive an engine. I shall be able to run an automobile without any artificial heat at all, though I may find it best to superheat the air after it is evaporated for economy."

Inventors, as a rule, are hopeful individuals, but especially with regard to liquid air may it be permissible to doubt if it will ever be adapted for automobiles. It does not give out as much power as was put into it in its production and can therefore never be as economical in principle as power derived more directly from coal, kerosene or gasoline. It cannot be kept under cover with safety, and when kept open evaporates rapidly enough to make the storing of it a very doubtful project. It cannot be piped for any considerable distance like petroleum or wired like electric energy and there are therefore no prospects of having it delivered to consumers just when wanted. Neither can it be manufactured by the consumer, as the apparatus required is large and costly. Its intensely low temperature prohibits its use in proximity to steel and several other metals and alloys which are rendered brittle below certain temperatures. Altogether its employment for power purposes is at the present fanciful rather than scientific.

Words That Hypnotize.

The Motor Age in its first issue, September 12, strongly called its readers' attention to the abuses, financial and mechanical, that are being committed in the name of liquid air, and which also cluster

around other natural agencies, such as electricity, aluminum, etc., which the "popular" magazines have invested with a nimbus of magic potentialities. Since then other journals have followed suit denouncing the attempts made by stock companies at exploiting the public's credulity, so that there is probably now small danger of having more stock companies launched on the mere strength of inventors' visions, even if backed by Tripler's name. Nothing in regard to liquid-air-automobiles is entitled to the slightest attention until a vehicle provided with that source of power shall have been actually demonstrated in practice. Then will be the time to explain why such a vehicle, even if its machinery should operate satisfactorily, must be vastly inferior for all practical purposes to those driven by prime motors deriving power from kerosene or gasoline, including steam engines. So far the liquid air automobile is a mere dream.

Scientific American's Opinion.

In its issue of October 21 The Scientific American seconds The Motor Age in revealing the character of one concern, the nature of which was fully exposed in our issue of September 12. Still repetition may be needful. The Scientific American writes:

Somebody once made a statement to the effect that where the carcass is there will the vultures be gathered together. Though the speaker had in his mind a far different event from the liquid air craze of the year 1899, and the liquid air fallacy that was to be killed as soon as it was hatched, the interpreter of the prophecy might be excused for thinking that in the sudden swoop that has been made by the company-promoting vulture upon the liquid air carcass, he beheld a veritable fulfillment of the prediction.

For the protection of the public, we wish to enter an earnest protest against the commercial exploitation of comparatively untried inventions of which so much is going on in various parts of the country. The most flagrant examples of this sort of thing just now are to be found in the starting of companies and the selling of stock for the

promotion of liquid air schemes of more or less, and generally more than less, preposterous pretensions. We do not say that any of these are deliberate attempts to obtain money falsely, but we do say that the crude nature of the liquid air apparatus, whether it be in the form of motor, refrigerator, explosive or whatnot, the absence of any demonstrated facts to establish its value, and the utter fallacy of the theories upon which the successful operation of many of these devices depend—render it our duty to warn the readers of the *Scientific American* against investing their money in enterprises which exist only in the imagination of their promoters.

We were recently consulted by correspondents with regard to the wisdom of investing in one of the most audacious of these enterprises, which has its headquarters in the city of Boston and boasts of a modest capitalization of \$5,000,000. We made it our business, accordingly, to ascertain by correspondence and personal inspection, just what kind of liquid air motors and plant for the manipulation of the same, the company possessed; but after the exchange of several letters and a visit by a representative of the *Scientific American* to the headquarters of the company we have failed to find either a motor, or a plant for the manufacture of the same, which would justify the Liquid Air, Power and Automobile Company in asking the public to put a single penny in its coffers.

About Air Ships and Automobiles.

From Mr. Tripler's published remarks made after his lecture in Cleveland we take the following relating to air ships and automobiles:

I will not tackle the airship for a while yet. I have many other things that are more immediately important and useful. If I had an airship now I hardly know what I would do with it. Of course, I could have lots of fun with it, but I do not just see how I would make a paying business of sailing through the air, for a while at any rate. I believe that liquid air will be the main factor in solving the problem of the navigation of the air when it is solved, as it seems pretty sure to be some day, and probably as soon as the world is ready to fly as a regular thing. I think that liquid air will afford the lightest motive power there is, and that is the reason I think it will be the best motive power for automobiles. That is the one problem of aerial navigation.

Some time ago Professor Langley of Washington, D. C., one of the most famous scientists the government has ever had, sent me a coil of tube to be filled with liquid air to be used in his flying machine experiments. He has been working on flying machines for twenty years, I guess, and is probably the foremost expert in the world on the subject. He wanted me to fill the tube with liquid air and send it to him arranged so

that it would evaporate into ordinary air at the rate of just so many cubic inches a minute. Of course that was impossible. To attempt to fill the tube with liquid air would be like pouring water into a red-hot boiler. The air would not run in at all till the tube was cooled very much below the normal temperature. Then if it were stopped up to keep the air from escaping it would burst the tube. When a receptacle is filled with liquid air and stopped so that there is no chance for the evaporating air to escape as it warms and changes into natural air, there will, as soon as the air is at the normal temperature again, be a pressure of about 12,000 pounds to the square inch in the receptacle. That would burst any ordinary container.

Usually when it has been desired to prevent the escape of liquid air after it is warmed to its normal temperature again the receptacles have not been filled more than half full, and even then there is a pressure of 6,000 pounds to the inch, which is too much to be considered safe.

In my automobile motor there will be an engine much like a steam engine only it will be driven by warmed liquid air instead of by steam produced in a boiler. The ordinary heat of the atmosphere is enough to vaporize the liquid air, and if the exposed surface is large enough it can be evaporated rapidly enough for use in an engine.



ELECTRIC COMPANY CHANGES PRESIDENT

The New York Electric Vehicle Company has elected R. McAllister Lloyd, president, in place of Isaac L. Rice, retired. An executive committee composed of Isaac L. Rice, John Jacob Astor, George H. Day and Martin Maloney was chosen.

Mr. Rice was president of the Electric Storage Battery Company of Philadelphia before he became president of the New York Electric Vehicle Company at the time of the general consolidation of electric manufacturing companies which utilize the Philadelphia battery.

His brief sojourn in the presidential chair of the Vehicle Company has given rise to many rumors, some of which are disquieting to stockholders in the various Electric Vehicle and Transportation companies that were formed as feeders for the four parent syndicates.

A financier in Chicago who is in position to know the truth stated recently to a representative of *The Motor Age* that the Chicago subscriptions to the stock of the Illinois branch were limited to two or three, aside from those whose connection

with electric or carriage building plants rendered the investment prospectively profitable in an indirect way. The bulk of the stock was underwritten in the East so as to effect a quick realization of the plan and favorably influence the subscriptions for other branch companies.

GRAHAM COMPANY'S CHANGE OF BUSINESS

The Graham Equipment Company of Boston has changed its name to the Graham Equipment-Motor Company, which is organized in Rhode Island, with a capital stock of \$100,000. The company has sold out its heavy truck business, and will hereafter confine itself exclusively to steam outfits, light carriages and delivery wagons. The particular feature of these vehicles will be Graham's Leaf and Spiral Suspension; and wooden wheels and steel tires.

MANUFACTURE IN COLORADO

W. O. Anthony of Colorado Springs, Col., is an intending manufacturer of several styles of motor vehicles. He has experimented for the past three and one-half years and his productions will include, besides hydro-carbon phaeton, delivery wagon and runabout buggy, a light steel bicycle motor attachable to any make of bicycle. He will also manufacture vehicle parts, especially a new steering gear designed to overcome vibration of the steering lever on rough roads.

SPECIALTY OF DELIVERY WAGONS

The Keating Automobile Company of Middletown, Conn., reorganized with large capitalization to succeed the Keating Wheel Company, will make the manufacture of delivery wagons a specialty. The motor power will be steam and the company is said to have received a large order for these wagons by Siegel, Cooper & Company of New York.

MOTOR EQUIPMENT FOR HEAVY WORK

The Motor Age is in receipt of the following inquiry:

Editor Motor Age.—Do you know of any motor equipment suitable for use on oil and gasoline wagons? We have two large wag-

ons of 400 gallon capacity. Do you know of any motor arrangement that could be used on this class of work?

Not knowing of any motor equipment for such heavy work being regularly manufactured anywhere in the United States at present The Motor Age submits the inquiry to its readers and will forward replies to the company making it.

WILL AWAIT DEVELOPMENTS

Some capitalists who are booming automobiles have once more given out the statement that the New York Central Railroad intends to replace its present cab system with automobiles. An official of the Central said recently that the company had received various propositions to equip the road with automobiles as a cab adjunct, but that so far nothing had been decided upon. In the future, when the automobiles have reached a greater degree of trustworthiness, it is possible the railroad may take them up, but not at present.—New York Tribune.

AN AMERICAN BENZ VEHICLE

S. Messerer, city time-keeper of Newark, N. J., has built a gasoline motor of the one-cylinder type. The engines are of the Benz system, and they and the motor are supported by a frame on the gearing, and are entirely independent of the body, so that the riders do not feel the vibration resulting from the working of the engine.—The Hub.

MINOR MENTION

Louis Lockert, the editor of *Le Chauffeur*, is dead.

Fred Gallion of Waynesboro, Pa., is reported to be at work upon a steam omnibus.

The Keystone Match and Machine Company of Lebanon, Pa., has built a steam vehicle.

The St. Louis Motor Carriage Company has increased its capital stock from \$30,000 to \$50,000.

Smisor Brothers of Webster City, Ia., have built a 500 lbs. gasoline motor vehicle which is said to give satisfaction.



AUTOMOBILE CLUB'S FIRST MEETING

THE AUTOMOBILE CLUB OF AMERICA COMPLETES ITS ORGANIZATION AND OUTLINES ITS PURPOSES AND PLANS FOR THE FUTURE.—NUMEROUS APPLICATIONS FOR MEMBERSHIP.

New York, Oct. 16.—Some thirty-five "automobilers" (for this word thanks are due Secretary Hedge) members for the most part, present or prospective, attended the meeting of the Automobile Club of America at the Waldorf-Astoria hotel to-night to accept the final report of the acting directors on a constitution and by-laws and the election of officers. First vice-president George F. Chamberlain was in the chair and Secretary Homer W. Hedge acted as master of ceremonies, both social and hospitable as well as official.

The club had its inception in last June, at which time a preliminary organization was effected, temporary officers were elected and a constitution and by-laws were proposed.

Purposes of the Club.

The objects of the club as set forth by the constitution are:

The promotion of a social organization or club composed in whole or in part of persons owning self-propelled pleasure vehicles for personal or private use. To afford a means of recording the experiences of members and others using motor vehicles or automobiles. To promote original investigation in the development of motor carriages. To cooperate in securing rational legislation and the formation of proper rules and regulations governing the use of automobiles in city and country, and to protect the interests of owners and users of automobiles against unjust or unreasonable legislation, and to maintain the lawful rights and privileges of owners or users of all forms of self-propelled pleasure vehicles whenever and wherever such rights and privileges are menaced. The encouragement and development in this country of the automobile. To promote and encourage in all ways, the construction and maintenance of good roads and the improvement of existing highways, and generally to maintain a social club devoted to automobilism.

Membership and Fees.

The membership is divided into four classes: honorary (limited to twenty-

five), active (limited to four hundred), life and associate. The last two classes have no limit placed on their membership. The honorary members include ex officio, the president of the United States, the governor of the state of New York, the mayor of the city of New York, and the director of the United States Road Inquiry. The fees for active members are \$100 entrance and \$50 payable semi-annually, and for associate members, whose residence must be more than fifty miles from City Hall, New York, \$50 entrance and \$25 annual dues.

The first hundred members will be charter members and are exempt from initiation fee. Of these the following have been elected and constitute the present membership: Gen. Avery D. Andrews, Winslow E. Busby, J. A. Blair, Amzi L. Barber, Le Droit L. Barber, Harrison E. Bird, George F. Chamberlain, Dr. E. C. Chamberlain, Juan M. Ceballos, Samuel T. Davis, Jr.; Charles P. Doelger, Charles R. Flint, C. J. Field, H. W. Hedge, W. H. Hall, Dr. F. C. Hollister, Whitney Lyon, V. Everit Macy, A. L. Riker, C. L. Richard, Gen. George Moore Smith, Gen. Roy Stone, J. Egmont Schermerhorn, George I. Scott, Clarence C. Vernam, S. H. Valentine, Alexander Winton, John Brisben Walker, David S. Walker, J. R. Whiting, A. H. Whiting, Clarence W. Wood, Dr. John D. Zabriskie.

Roster of Functionaries.

Announcement was made of the election of the following permanent officers: Gen. Avery D. Andrews, president; George F. Chamberlain, first vice-president; V. Everit Macy, treasurer; H. W. Hedge, secretary, with Frank C. Hollister, Winslow E. Busby, Whiting Lyon, George F. Chamberlain, Homer W. Hedge, William Henry Hall, George Moore Smith, Charles R. Flint, all of New York

city, and V. Everit Macy of Scarborough-on-the-Hudson, as the governors.

Co-operation with Foreign Clubs.

Chairman Chamberlain briefly reviewed what had been done and dwelt on what remained to be done to carry out the objects of the club. He stated that the club had been duly incorporated and that the Automobile Club of Great Britain and Ireland and the Automobile Club of France had been communicated with in reference to reciprocation of advantages such as is in vogue between the automobile organizations of Europe. The first named has declared itself in favor of such reciprocity and the latter will take formal action on the subject at the next meeting.

Plans for the Future.

Mr. Chamberlain said that the choice of a permanent club house with conveniences for the storing and repair of vehicles, which should be a common center for the exchange of views, was the next step in order. Club runs should at once be organized and encouraged and the promotion of an exhibition late in the winter or early in the spring was already under consideration. The matter of legislation should receive their earnest consideration. Reckless speed on the road was bound to be followed by reactionary legislation. The mania for high speed was the greatest danger to automobilers in prejudicing the authorities against them. The club should, therefore, co-operate in the passage of a law to regulate speed. In fine runs, tours, contests, exhibitions and lectures should be promoted.

Management of Shows.

Thomas Clark, one of the founders of the Automobile Club of Great Britain and Ireland, was present and made a brief address. He said that since the light locomotion act had been passed the club had made rapid progress and now had about 500 members. The exhibition that had been held while not a financial success was successful in every other particular. There were exhibits from all the principal manufacturers, vans were organized and tests of various kinds made. The club, notwithstanding the financial loss, however, had decided to hold another ex-

hibition as a benefit to the industry. A trade exhibition had subsequently been held by professional promoters and had made money. The club has its own club house, though without storage facilities, and exchanges courtesies with the French club.

Club Runs.

The subject of the proposed club run was discussed informally and various destinations were suggested. This brought about some humorous exchange of repartee among the advocates of the various motors growing out of an inquiry as to whether electricity could be obtained at one of the objective points suggested.

Mr. Bostwick, who Secretary Hedge said owned more autos than any man in the club, had some experiences to tell, winding up with an expression of satisfaction with the motor outfit he was now using, which was built by himself.

A visitor, who had just returned from a study of automobilism abroad, suggested that the exhibition be held early in February. This would enable the exhibits to be taken to the Paris exposition intact and would give exhibitors the prestige of any awards made here in the eyes of the French jurors. Mr. Clark had said that the British club would hold its next exhibition about Christmas so that buyers could see the new models and have ample time to get their orders filled before the spring driving season opened.

There will be another meeting of the club in about two weeks. Already a list of fifty more eligible "automobilers" awaits election to charter membership.



A GOSPEL AUTOMOBILE

Rev. A. S. Parsons at Oakland, Cal., is having built a Gospel automobile from which he intends to conduct revival services next spring. The wagon, it is said, will weigh three tons and will be run by a gasoline motor of four horse power. The bed is to be 13½ feet long and 5 feet wide. If the reverend gentleman should get into sandy or hilly districts he may find practical use for the faith that will move mountains or his four horse power must be geared to a snail's pace lest the three tons of weight should be stalled.

DOCTOR'S CLOSED GASOLENE CARRIAGE

TESTIMONY OF ENGLISH PHYSICIAN TO PRACTICABILITY OF MOTOR VEHICLES FOR PROFESSIONAL VISITS WHEN A THOROUGH GOING TRIAL IS GIVEN THEM.

An English physician, W. W. Barrett, owns two motor vehicles, both fitted with Daimler gasolene motors. One of them, which is shown in the accompanying engraving, he has remodeled, making it a closed carriage in which the driver is protected against the weather.

Questioned by a representative of The Autocar as to the advantages or otherwise of the automobile as compared with the horse, and on his experiences generally, Dr. Barrett replied much as follows:

The Doctor's Recital.

"The saving in time is enormous, considerably more than an hour a day, but



Daimler C carriage Remodeled.

as to the question of cost I prefer not to say anything at present. Running expenses are less, but before going into actual figures I must have a longer test of the automobile. How the cars stand and cost of renewals must be taken into consideration, and I think a five years' test is necessary to ensure a just comparison. I employ two men to look after my cars, and both of them have learned all they know about automobilism from myself. They have alternate hard and easy days, and each man has every other Sunday to himself. A hard day means that the man accompanying me on my

rounds does not leave off work until he has put the car in perfect readiness for the next day's work, and to do this, in a case where I do not return home until, say, nine o'clock at night, might entail his working until eleven or twelve o'clock. The men have a very easy and comfortable time when out with me, however. Take to-day, for instance, while the drivers of horses were being buffeted by rain and wind, my man was inside the car with me, dry and warm all the time, and, while I was with my patients, reading a book. My average pace is from eight to ten miles an hour, but, of course, it is possible to travel much faster than that; when we were out together a few minutes ago the first mile was done at the rate of nearly fourteen miles an hour.

Two Vehicles Desirable.

"Have I had any accidents? No, I have never had an accident of any kind on the road, have not so much as run over an animal or grazed a vehicle. At first the horses did not like my car, and for some time after I had used it regularly the men at cab stands thought it necessary whenever they saw me coming to run to their horses' heads. Finding that the horses were losing their fear of the car, the men gradually relinquished the habit of holding their heads, and I could not help but be greatly amused for some time afterwards to see that the horses on the cab stands actually turned their heads to see if the men were coming to hold them whenever I hove in sight. Oh yes, I could give you many instances where I have saved much time by having a motor car always in readiness to start out. Quite recently I was called out late at night to a very urgent case. I was dressed and on the way in ten minutes, and finding, when I reached my patient, that I required additional assistance, I was able by means of the car to cover a great deal of ground in a very short time, and to return promptly with the neces-

sary help, much more promptly than if I had been dependent upon horses. How many horses do my cars represent? Two. Doctors going in for automobilism should always have two cars, and one of them should be covered in. I am quite satisfied with the experiment myself, but you see I have gone into the thing thoroughly, and have left no stone unturned to secure successful results."

Night Drafts Avoided.

In addition to the above statements Dr. Barrett pointed out that his rounds made

on a motor car practically ended in his own house. He ran his cars right into the motor house, a passage from which led into his dining room. His house is heated with hot water, so is the aforementioned passage, and so is the motor house, and when he is called out in the night he passes from his bedroom, and starts off in his motor car (same temperature inside as the house through standing in the warm motor house) without once having come into contact with the outside air. He starts out warm, and has no cold draughts to face on returning.

FOUR STEAM 'BUS SYSTEMS

DESCRIPTION BY STERLING HEILIG OF JOLLY LITTLE OMNIBUSES THAT CONNECT THE COUNTRY INNS IN SUNNY FRANCE WITH NEAREST RAILWAY STATIONS.—STEAM THE POWER MOSTLY USED.

The four steam systems in vogue in France—the Dion et Bouton, the Serpollet, the Weidknecht and the Scotte—supply the power for all those jolly little omnibuses, breaks and road train lines that are reopening the French countryside, neglected since the days when the all-conquering railroad changed the life of people, writes Sterling Heilig to the Washington Star.

A thousand individual industries are thus being opened, to the benefit of the French farmer. An enterprising youth with an automobile van picks up produce that the discouraged farmer would never risk sending by the tyrant railroad to the uncertain French market. Stage coach routes, reopened by individual speculators, are found to pay under the new conditions of economy. For excursions there is nothing like the automobile omnibus; and cheap country resorts find in them exactly what they needed to connect with the railway.

Advantages of Steam.

Steam automobiles are certainly the most difficult to operate, because of the attention to the boiler. On the other hand, they are capable of developing, at need, much greater horse-power than the indicated average, something practically

impossible with the teuf-teufs. In a word, they require rather engineers than touch-the-button amateurs. Nevertheless, the Serpollet steam system, heated by petroleum, is claimed to require no greater engineering skill than a Dion et Bouton gasolene tricycle, while boasting any number of advantages as a weight carrier—economy of combustion, great hill-climbing power, and easily varied speed. From the point of view of cleanliness, everything is on the side of the steam automobile.

The Dion & Bouton Omnibus.

The Dion et Bouton steam motor is chiefly remarkable for its boiler. Only a few days ago a British naval authority again declaimed against the French foolishness of tubular boilers. Whatever the case may be with regard to battle ships, these "toys" are doing good work over the hills of France. Composed of tubes and cylinders presenting the greatest possible surface to the combustion of the gas coke which is its fuel, the Dion et Bouton boiler transforms its small quantity of water almost instantly into steam, and this steam, wet at first by reason of the rapidity of its development, is dried by its slow passage over other heated surfaces, thanks to which its efficacy is very

much increased. These boilers are constructed from $2\frac{1}{2}$ to 44 horse power. Employed with the new three-cylinder compound motors, the combination has little in common with the old-fashioned locomotive. The Dion et Bouton omnibus, that took the heavy-weight prize at Versailles, carried sixteen passengers and 1,000 pounds of baggage at an average speed of nine miles an hour during a six days' trial over all kinds of roads. It cost \$4,500.

What characterizes the Serpollet system is its complete abandonment of coke in favor of liquid combustibles—lamp petroleum—in the case of two, four and eight-place tourist voitures, and heavy oils for omnibuses and vans. The motive power is still steam, however, and the Serpollet boilers are even more complicated than those of Dion et Bouton.

Fuel, Smoke and Odor.

The petroleum residues, called heavy oils, have long been employed in Russia and, I believe, in the United States, as fuel for locomotive engines; but their price makes them impossible in France. Their equivalent, however, is now extracted from the tar product coming from the manufacture of gas, and their cost, of from \$15 to \$17 a ton, makes them a no more expensive fuel than coke. As their employment dispenses with the fireman who would otherwise be needed on heavy-weight steam automobiles, the system claims a special economy, though some of the Dion et Bouton omnibuses also dispense with the fireman. The Serpollet boilers, like the Dion et Bouton, afford a superheated and dried steam that reduces the condensation in the cylinders almost to nullity. There is no waste of fuel, of steam, of effort. The omnibuses glide by noiselessly and without smoke or odor.

Weidknecht's Construction.

The Weidknecht steam omnibus, which now does a regular passenger service between the Place de la Concorde, Paris, and the suburbs of Neuilly, is the heaviest vehicle you can see freely operating on the streets of Paris. There are clumsier superheated steam and compressed-air locomotives operating tramways in the city, but the 30-place Weidknecht is a novelty to be running loose. People are not yet

habituated to it, and it causes dark forebodings for the twentieth century among the pessimistic. Yet no one can deny that it is merciful to spare the beautiful Paris avenues the disfigurement of tracks.

One H. P. per Passenger.

Coke is used, to produce as little smoke as possible. The waste steam is made to escape by the same chimney, to increase the draught, and the hot gas acting on the steam serves at the same time to make it almost invisible. The great production of steam by this system permits the motor to develop a continuous force of twenty-five horse power, which can be increased to thirty-five horse power at need, so that the thirty-place Paris-Neuilly omnibuses take long 7 per cent inclines at the rate of eight miles an hour. In a state of society where economy is everything this is the power admitted to be absolutely necessary to an automobile omnibus pretending to do first class work—one horse power per passenger. On good roads the expense per mile is thirty-five quarts of water and from eight to thirteen pounds of coke. The Weidknecht and the Scotte omnibuses are really road steam engines, and the Scotte company actually ran a road train at the last Versailles heavy-weight meeting. In a word, the heavier the business the nearer the approach is to the old steam locomotive, the order seeming to be: light petroleum racers, petroleum-heated steam breaks, heavy oil-heated, light-weight steam omnibuses and coke-heated steam road cars and trains.



OUR PUBLIC EDUCATORS

The following extract from the Montreal Journal of Commerce is reprinted as the latest example showing the depths of ignorance from which even metropolitan newspapers sometimes dish out information in their capacity as public educators. It is this class of newspapers which are responsible for the various \$25,000,000 Electric Vehicle and Transportation companies in the United States, whose stockholders will discover, too late, that it is a ruinous business to buy and operate heavy electric cabs, however profitable it may be to build and sell them.

Listen to the "public educator" that

prides itself on having foretold perpetual motion in its most ridiculous form. It says:

It is becoming evident, from day to day, that in the near future the horse will be supplanted by electricity for the ordinary purposes of practical every day life.

It has before been intimated in these columns that in all probability some means would be discovered by which vehicles could produce a self-acting propelling power, as they travel along, that will not only keep them moving, but supply power that can be stored up for future use.

Such a wonderful invention seems likely to be brought into use if not altogether perfected before the close of the century. Already we read of the successful production of electric lighting of cars on three different railroads derived from the axles of the car wheels when running and from which a storage supply is obtained. This is a great step forward. In view of past discoveries it is reasonable to expect this first step will be followed by others that can be applied to the horseless carriage by which it will be enabled to be self-propellant, independent of a storage power, the want of which is now the only drawback to its general use for heavy traffic and travel on country roads.

ACCIDENTS IN PARIS

A Paris newspaper publishes statistics to show that during a given period only one death and thirty-three injuries have been caused by automobiles in that city, and that during the same time vehicles drawn by horses have caused no less than sixty-seven deaths and 745 injuries.

The statistics are interesting rather than conclusive, because they do not take into account the relative numbers of the two kinds of vehicles in use.

MOTORS CONSIDERED SACRILEGIOUS

A writer in Truth (England) furnishes an explanation of the peculiar fact that electric hearses have not yet been made though they undoubtedly would be well adapted to supplant the horse-drawn hearse, as referred to in The Motor Age of October 17. Relating his experience he says:

"I had occasion to attend a funeral not long since, and after the function was concluded I gently asked in a casual way why we did not have moto-hearses and

moto-carriages for such purposes. A respectable female of my acquaintance said, with a look of shocked surpris: 'Don't jest on sacred subjects.' This is why we have no motohearses. The mind of the average female is strongly unresponsive. A horse-drawn hearse, both of an intense blackness, is by long established convention invested with a 'sacred' character, and no amount of argument will divest it of this. It will be many years before automobile hearses and carriages become popular, the obstacle to their employment being nothing more nor less than the prejudices of, for the most part, ignorant but intensely respectable women."

THE DECEPTIVE SPEED OF AUTOS

The speed of an automobile is deceptive to expert drivers of horses. Three noted horsemen were taken a ride in one of the vehicles of the American Automobile Company through Prospect Park, in Brooklyn, to the ocean by the way of the boulevard. They estimated that they were going at the rate of 15 miles an hour, and claimed that was as fast as anyone should ride. They looked at their watches on leaving the park, and without changing speed, the five and one-half miles (by the mile posts) to the ocean were made in a fraction less than 17 minutes. Another party of four, returning from a club house at Bath Beach to a point in Brooklyn, rode, as they thought, at about the same speed as they were accustomed to rapidly drive their horses. The shortest record they had with horses was 58 minutes. They were surprised to find they had been deceived in their estimate of speed, and had reached their destination in 32 minutes. There was no attempt made to speed otherwise than as described.

MRS. ASTOR'S SWELL TURNOUT

Mrs. John Jacob Astor is mentioned as the first woman to use her own brougham automobile for social events. It is a beautiful vehicle, lined in blue satin, and, with its liveried driver, is quite a show.